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tongue-sheath is represented at *a*; the epiglottis at *b*; and the rima-glottidis (aperture of the windpipe) at *c*.

The epiglottis is a thin, erect, flexible, flag-shaped or curved-spatulate body, situated upon the median line immediately in front of the rima-glottidis, and with its free end directed upward and backward, its posterior edge curving partly over the rima. It is evidently this epiglottis that produces the hoarseness of the hissing sound, which it accomplishes by dividing, and fluttering in, the strong current of air which is forced from the lung out of the rima.

That this peculiar body is really the homologue of the epiglottis in the higher animals, is shown by its position in relation to the other parts of the mouth. It differs from the epiglottis in those animals by being placed longitudinally instead of transversely, and in not being hinged, and therefore not capable of falling down to cover the rima in the act of swallowing. As serpents' food is not comminuted, but swallowed whole, such protection to the rima is unnecessary.

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THE CAROLINA WREN; A YEAR OF ITS LIFE.

BY CHARLES C. ABBOTT, M.D.

EARLY in the morning of Sept. 1, 1882, as I was passing near the stable, my attention was called to the shrill notes of an excited little bird that, darting from the building, alighted on the fence near by and screamed *Jimmée, Jimmée, Jimmée*, so loudly, that every James in the township should have hastened thither. No response came, and again the call, a clear, penetrating whistle, was repeated. This continued, at brief intervals, for two or three minutes, and then, as quickly as it came, the bird flew back to the stable, entering through a knot-hole in a weather-board with such rapidity of movement that I could but marvel at its dexterity.

Half an hour later I saw this same bird again, coming from the stable through the same knot-hole, and this time it sang as loudly, impatiently and frequently as before, but the notes were different. It said, or seemed to say, *tsau-ré-ta, tsau-ré-ta, tsau-ré-ta*. Had I not seen the bird I should have recognized it by a peculiarity in its song, which was never wanting whatever might be the particular notes it uttered. My attention being called to this little bird—the Carolina wren (*Thryothorus ludovicianus*)—I deter-

mined forthwith to study its habits, as opportunity presented, for the little that I find recorded of it is far from satisfactory.

What might be the attraction in the stable was my first object to determine, for I did not suppose it had a nest so late in the season, and I had not noticed the bird particularly during the summer months, although I knew they were in the neighborhood. A protracted search failed, indeed, in finding any nest, but while I was wandering about I was surprised to see the wren enter the building and proceed immediately to search for spiders, which hitherto were abundant in every nook and corner, but now were comparatively scarce. Once the bird alighted upon the back of a horse standing in its stall, and while there quietly preened its feathers, as much as a wren ever deigns to do this, and then with a shrill chirp, that startled the animal, away it flew in search of more spiders.

Late in the afternoon of the same day I again saw the wren enter the stable and pass directly through the mow-hole to the hay-loft overhead. I followed and found that the bird had taken possession of a barn-swallow's nest, and here it was keeping bachelor's hall. The nest was placed against a rafter, near the peak of the roof, and was quite inaccessible to cats. This probably the wren did not consider. It is a sly cat that ever catches a wren napping. The bird did not like my discovering his hiding place, or at least was annoyed by my inquisitiveness. It circled about me several times, snapping its beak I thought, and chirped an unusually emphatic *tsip*, which I took to be the wrennish for "damn."

All through the mellow September days, early and late, the clear notes of this wren were to be heard, and through October, and long after every summer songster had departed, I heard them daily and many times a day.

During the autumn there was little to note with regard to the bird's habits. The insects in the stable and outbuildings afforded it a sufficient food supply, but during exceptionally warm and sunny days it made frequent visits to a wooded slope near by, and there, among the giant oaks and chestnuts, it seemed more lively and full of song than when nearer home.

A few words with reference to the character of its song. Every utterance is sharply defined by a peculiarity that belongs only to this bird. I think I should know the bird, by its voice, wherever I might hear it.

Again, while the bird has a great variety of notes, I believe I have never heard it mingle these various utterances. It may chance to whistle *jimmée* or *tsau-ré-ta* or *phoè-do*, but it never follows one with the other. It is in all cases a repetition of the notes it first utters. Thus I once recorded its song as uttered during ten minutes. Its notes then were *phoèdo*, *phoè-do*, *phoè-do phée* ! with a rest of some five to ten seconds; then repeated, and this continued without any variation until the notes as here given had been uttered sixty-four times. As the bird was about commencing the sixty-fifth repetition it was frightened and flew off. A half hour later the bird took up its position on a hop-vine pole and sang the notes represented by the syllables *tsau-ré-ta* forty-seven times, with intervals of about five seconds between each utterance.

I find it very generally stated that this wren is a "mocker," imitating many of our common songsters. Evidences of this have never come under my notice. Carefully as I have listened to this wren for a year, I have never heard a note that I should consider as not its own, and not borrowed. It is not safe, however, to conclude that it does not mimic other birds, because the one I have studied failed to do so. One's observations must cover a wider range of territory, and extend over many years, before it is safe to be positive in the matter of the habits of birds. Only recently I read a most painful account of the many dangers to which birds nesting in the valley of the Hudson river are exposed. According to the writer but very few broods are successfully reared. Happily, here in the Delaware valley the birds are more fortunate, and a failure is the exception, not the rule. So, too, it may be with the songs of birds. My Carolina wrens do not mimic, but perhaps my neighbor's do.

At the onset of winter, which in 1882 was late in November, the wren seemed unusually active, and sang even more frequently than during the sunny days of early autumn. At this time the characteristic tyrannical temper of the wren tribe showed itself. My wren had preëmpted the immediate vicinity of the stable, barn and other outbuildings, and woe betide any trespasser; snowbirds, sparrows, titmice and even bluejays were promptly warned off by the little tyrant. If they questioned his authority it was only to their sorrow. So it proved the long winter through. No other birds came near to stay. Spider-hunting, fighting and singing occupied all its moments, and, I am told, it

was often heard to whistle late in the night. Probably it was dreaming, which is not to be wondered at, considering the activity of the bird's brain when awake.

Thus for six months this bird lived quite alone. It certainly never wandered far at any one time. It was seen at too short intervals for this. But if lonely it was not morose, and to all appearance thrived admirably from September to March.

From March to September it lived another life. As early as the 7th it appeared upon the scene with a companion. The two were very noisy and demonstrative. I could not detect much evidence of affection, and at times their actions were strongly suggestive of quarreling. This, however, did not last long. In the course of a week they had settled all their little differences, and hunted the spiders in the outbuildings, and early insects everywhere, in company. The song of the male bird was now more varied and frequent, yet never with a trace of mimicry of the notes of other birds. Its song in volume exceeded even the clear whistle of the cardinal grosbeak, and could be heard distinctly for half a mile during a still morning.

March 18 was a pleasant, spring-like day, and an early Maryland yellow-throat was singing merrily. This drew me out of doors, and I noticed directly that the Carolina wrens had commenced nest-building. Both birds were busy carrying long grass, strips of inner bark of shrubs and an odd thread or two that were found near by. One bird examined the clothes-line carefully, but could not succeed in unraveling any portion.

Following the wrens, I found they had located on the upper surface of one of the plates of the frame of the barn. The nest was directly under the roof, and quite filled the space between the upper surface of the plate and the shingles, about six inches. The nest, when completed, except the lining, was quite a foot in length. It was, in fact, a mere shapeless mass of loose material. Into this the female wren burrowed and remained most of the time, while the male bird brought softer fibers and chicken feathers. With these the cavity was lined and the nest completed.

March 24 an egg was laid, and another each day until the 29th, when the hen commenced setting. During the days that followed the male bird was very active in supplying his mate with food, and took his turn in caring for the eggs, but evidently under protest; this I conclude from the super-merry songs he uttered on

being relieved. Indeed it is a marvel to me that even a female wren can sit still. They have such nervous temperaments that an entire change of nidification, whereby solar heat could be depended upon, would, no doubt, be hailed by them with joy.

Five young birds were hatched April 9. When twenty days old they were able to fly, and had left the nest and apparently their parents. I saw them, evidently shifting for themselves, two days later, when they disappeared. May 14 the old birds were again building a nest, this time in another building, but in a similar position. The structure was identical in shape and size, but differed in being largely lined with snake-skins. It was completed by May 20, and a week later seven eggs had been laid, and June 7 six eggs were hatched. The young were on the wing July 1. July 15 a third nest was found nearly completed. Five eggs were laid by the 23d, and on August 8 the young birds of the third brood had appeared. These could fly by the 26th of the month, and had left the nest and the neighborhood by the 30th.

It is now a few days more than a year since my attention was particularly called to the single Carolina wren that frequented the stable. During the past twelve months it was closely watched, and every habit noted. When I was absent others observed it for me, and nothing of importance escaped attention. While I am writing these concluding lines I can hear the bird singing merrily as it sits upon the top of the hop-vine pole, of late its favorite perch. While listening to its song it is a proper time to sum up the results of what I have seen and heard. As a songster it ranks very high, and its utterances were all original. As a spider-hunter it is as active as any of the family of wrens. As a courageous foe of the English sparrows it is a blessing to the community.